

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

Please cancel claims 27-29 without prejudice to or disclaimer of the subject matter therein.

19. (previously presented) A method for manufacturing a piezoelectric element having a piezoelectric material with a perovskite crystal structure expressed by the formula ABO_3 in which the symbol A represents at least an element "a", comprising the steps of:

- a) forming a lower electrode;
- b) forming over the lower electrode a film of the piezoelectric material having a perovskite crystal structure expressed by the formula ABO_3 in which the symbol A represents at least an element "a" by,

a first step of producing an oxide in an amorphous state containing an element "a" and subjecting the oxide to a hydrothermal process using an aqueous solution containing the element "a" thereby crystallizing the oxide, wherein the oxide produced in the first step is a piezoelectric material having a perovskite crystal structure expressed by the formula ABO_3 in which the symbol A represents at least an element "a"; and

a second step of producing a piezoelectric material by subjecting the oxide produced in the first step to a hydrothermal process using an aqueous solution containing the element "a", so as to increase the amount of the element "a" contained in the

piezoelectric material due to its substitution for element "a" contained in the oxide produced in the first step; and

- c) forming an upper electrode over the piezoelectric material formed in step b.

20. (previously presented) A method of forming an ink-jet recording head, comprising the steps of:

forming a diaphragm film over a substrate;

manufacturing a piezoelectric element over the diaphragm film by the method for manufacturing a piezoelectric element according to claim 19; and

working the substrate and forming a pressurization chamber at a site capable of transmitting displacement of the diaphragm film produced by driving of the piezoelectric element.

Claims 27 - 29 (canceled).

30. (previously presented) A method for manufacturing a piezoelectric element having a piezoelectric material with a perovskite crystal structure expressed by the formula ABO_3 in which the symbol A represents at least an element "a", comprising the steps of:

- a) forming a lower electrode;

b) forming over the lower electrode a film of the piezoelectric material having a perovskite crystal structure expressed by the formula ABO_3 in which the symbol A represents at least an element "a" by,

a first step of producing an oxide in an amorphous state containing an element "a' "; and

a second step of producing a piezoelectric material by crystallizing the oxide produced in the first step in a hydrothermal process using an aqueous solution containing the element "a", so as to increase the amount of the element "a" contained in the piezoelectric material due to its substitution for element "a' " contained in the oxide produced in the first step; and

c) forming an upper electrode over the piezoelectric material formed in step b.

31. (previously presented) The method for manufacturing a piezoelectric element according to claim 30, wherein the hydrothermal process performed in step b is conducted using an aqueous solution containing both the element "a" and the element "a' ", and wherein the ratio in which the element "a" and the element "a' " are present in the aqueous solution is between 2:8 and 4:6.

32. (previously presented) The method for manufacturing a piezoelectric element according to claim 31, wherein the aqueous solution containing the element "a' " is an alkali aqueous solution of a compound expressed by the formula $a'(OH)_n$ ($n = 1, 2, \text{ or } 3$).

33. (previously presented) The method for manufacturing a piezoelectric element according to claim 30, wherein the oxide in an amorphous state produced in step b is produced by pyrolyzing a sol containing an organometallic.

34. (previously presented) The piezoelectric element according to claim 27, wherein said piezoelectric material is expressed by the chemical formula $(\text{Ba}_x\text{Pb}_{1-x})\text{TiO}_3$, and x in this formula is within the range of $0 < x < 0.05$.